APPENDIX H
Unexpected Condition Response Plan

APPENDIX H

UNEXPECTED CONDITION RESPONSE PLAN
TABLE OF CONTENTS

[TOC \O "1-4"]FLOWCHARTS

1. UNEXPECTED CONDITIONS – APPROACH

Geosyntec prepared t[T]his Unexpected Condition Response Plan (UCRP) to addresses the discovery of Unexpected Conditions during development activities within the Property. Although investigation and remediation has already been implemented by the Navy and an approved remedy is in place, Unexpected Conditions could potentially be encountered during the course of development. An Unexpected Condition is a condition observed in the soil, soil vapor, sediment and/or groundwater that indicates the potential for hazardous substances and/or petroleum substances to exist beneath the Property at a location that has not previously been identified, characterized, or remediated by the Navy. By way of example, Unexpected Conditions may include visibly discolored soil and/or contaminated groundwater in an area not previously identified by the Navy, soil and/or groundwater exhibiting a strong chemical odor in an area not previously identified by the Navy, unexpected subsurface structures (e.g., pits, sumps, underground storage tanks, etc.), radioactive materials, material potentially presenting an explosive hazard (MPPEH), and/or other visual or olfactory evidence of a historical release at a location not previously identified by the Navy.

This UCRP establishes protocols for the assessment and response to the discovery of an Unexpected Condition and for a path forward such that development activities can continue safely and timely within the context of the approved remedy. The UCRP protocols provide for initial oversight by and consultation with the San Francisco Department of Public Health (SFDPH); for notification to and consultation with the Federal Facility Agreement (FFA) Signatories; and for possible longer-term oversight by the FFA Signatories depending on the circumstances and nature of the response. As a component of the Site-specific health and safety training that will be required of equipment operators and site workers, instruction will be given on how to identify and respond to potential Unexpected Conditions. Details of health and safety training, including additional onsite protocols for identification and handling of potentially hazardous materials, will be provided in the Site-specific Environmental Health and Safety Plan (EHSP), an outline for which is provided in Appendix D to this RMP.

This UCRP is intended to fulfill the requirements of Article 31 of the San Francisco Health Code ([HYPERLINK "http://www.amlegal.com/nxt/gateway.dll/California/health/article31%20hunterspointshipyard?f=templates$fn=default.htm$3.0$vid=amlegal:sanfrancisco_ca"]) for preparation of an unknown contaminant contingency plan. The Owner may address Unexpected Conditions by following the steps outlined in this UCRP; however, at any time after the discovery of an Unexpected Condition, the Owner may elect to request the

Navy to take responsibility for the condition. In addition, under specified circumstances the UCRP requires that the Owner consult with the FFA Signatories to determine whether a new CERCLA action is required, which would be the responsibility of the Navy. If the Navy takes responsibility for the condition, the Owner must suspend all work at the location of the condition pending completion of Navy response to allow the Navy adequate access to implement the response.

2. RESPONSE PLAN

This Section identifies how Unexpected Conditions shall be addressed, the general approach of which is presented in the attached flowchart H-1. The primary objectives outlined in Flowchart H-1 are to: i) provide initial notification of and response to the discovered condition to the appropriate agencies; ii) assess if the Unexpected Condition is a Category 1 Condition (described below); iii) make a preliminary determination as to whether the condition qualifies as a potential Category 2 Condition; iv) prescribe the collection and analysis of initial samples; and v) determine whether any response action is required. A Category 2 Condition for which a response action is required will then follow the course of action specified in Flowcharts H-2 (pertaining to petroleum substances only) and H-3 (pertaining to hazardous substances or hazardous substances comingled with petroleum substances). ~~During the initial assessment process, the Owner will proceed under the oversight of the SFDPH and will provide the FFA Signatories with notice of results and proposed actions, including sampling results, documentation of proposed work, and recommendations for specific responses. After the initial response, SFDPH or the FFA Signatories may request longer term oversight by the FFA Signatories. In the instance where a new CERCLA action or a Site-specific Corrective Action Plan (CAP) might be required, the Owner will consult with the FFA Signatories, such as in the case of a Hazardous Substance/petroleum substance co-mingled condition, or the RWQCB in the case of a petroleum substance only condition, to determine whether these actions might be needed.~~

2.1 Initial Assessment Procedures

Upon the discovery of a potential Unexpected Condition, the Owner shall suspend work and immediately notify the Site Safety and Health Officer (SSHO). The SSHO will assist the Owner with the initial assessment procedures described herein to ensure that work proceeds in a safe manner.

After notifying the SSHO, the Owner must first conduct an initial assessment to identify the nature of the condition. The nature of the condition will be described as one of two categories of conditions, as follows:

- **Category 1 Condition**: A Category 1 Condition could be an immediate hazard to construction workers and warrants coordination between the developer, the SFDPH, and the FFA Signatories. Category 1 Conditions include radioactive materials and MPPEH. By way of example, radioactive materials include buried luminescent dials, radioactive aircraft deck markers, luminescent gauges and signs, and sandblast grit. MPPEH materials that might be found include empty

shell casings, discarded spent military munitions, and munitions debris containing chemical residue.

- **Category 2 Condition**: A Category 2 Condition is less likely to represent an immediate hazard to construction workers and warrants coordination with the SFDPH in consultation with the FFA Signatories, as appropriate. By way of example, Category 2 Conditions include hazardous substances and/or petroleum substances in soil, soil vapor, and/or groundwater. A Category 2 Condition may involve hazardous substances only, petroleum substances only, or a comingled condition of both. The preliminary determination will be made based on initial observations, field screening, and/or laboratory analyses, as described in Section 2.2 of this Appendix. As appropriate, initial assessment of the Unexpected Condition could also include excavation and segregation of soil that contains visual or olfactory evidence of hazardous or petroleum substances to provide an indication of the magnitude and geographic extent of the condition.

If the condition is determined to be a Category 1 Condition, the Owner will stop work, secure the area, ~~and~~ notify the SFDPH and FFA Signatories within 24 hours of designating ~~the determination that the condition is~~ a Category 1 Condition, and Cconsult with FFA signatories to determine the appropriate response action. In the case of radioactive materials, the ~~developer~~ Owner will consult with SFDPH and FFA signatories to determine the appropriate response~~coordinate a response with the SFDPH~~ and may request the Navy to take appropriate action. In the case of MPPEH, the ~~developer~~ Owner will consult with SFDPH and FFA signatories to determine the appropriate response, ~~notify the SFDPH~~ or and, in the case of suspected unexploded ordnance, notify the San Francisco Police Department Bomb Squad to take appropriate action. In either case, the FFA Signatories and the SFDPH may require that a ~~work~~ response plan be submitted for review and approval prior to initiating the action. This process is documented in Flowchart H-1, Boxes 1, 1B, and 1C. Although work will be stopped at the location of the discovered Condition until an approved response action is completed, work may proceed at other locations not affected by the Condition, unless otherwise directed by the Navy, under the guidance of the Risk Management Plan (RMP).

If the Unexpected Condition is determined to be a Category 2 Condition, the Owner will notify the SFDPH and the FFA Signatories of the discovery within 24 hours of the determination that the Condition is a Category 2 Condition. Following the notification, the Owner will proceed with the initial assessment to determine the nature of the Condition. This process is documented in Flowchart H-1, Boxes 1A, 2, 2A, and 2B.

The initial assessment actions will be performed in accordance with applicable federal and state laws and regulations and the Site-specific EHSP and appropriate measures will

be undertaken to ensure that assessment activities will be conducted in a safe manner. The SSHO will be responsible for performing activity hazard analyses, evaluating any change in site conditions, and modifying the EHSP accordingly. The SSHO has the authority to stop work if an unsafe condition arises.

2.2 Category 2 Condition Assessment Procedures

Following the notification of the initial discovery and upon concurrence from the SFDPH and the FFA Signatories, the Owner will proceed with further assessment of a Category 2 Condition until the condition can be classified as a hazardous substance condition, petroleum substance condition, or a co-mingled condition. The assessment procedures are documented in Flowchart H-1, Boxes 2, 2A, and 2B. Assessment work shall be conducted by a competent and ~~licensed~~ Registered pProfessional.

The assessment may include the use of one or more field screening instruments: organic vapor monitor (OVM), photoionization detector (PID) x-ray fluorescence (XRF), gamma ray spectrometer, etc., physical observation (visual and olfactory characteristics), and sampling and chemical testing of the exposed affected media (soil, soil gas, groundwater, sediment, etc.). The assessment of the Condition may also include excavation and segregation of soil that contains visual or olfactory evidence of contamination to provide an indication of the magnitude and geographic extent of the Condition. In the event that some amount of excavation will occur, the Owner will follow the soil management protocol specified in the RMP (Section 5.3). Field documentation will be generated that describes the location and type of the affected media, describes samples collected (number, location, type), conveys results of any field screening (OVM, PID, XRF, etc.) results, provides volume estimates of excavated/stockpiled material, and describes stockpile control measures.

The assessment will follow the protocol specified in the most current version of the Navy's Quality Assurance Project Plan, as applicable. A minimum of one investigation sample and corresponding quality control (QC) samples (duplicate, travel blank, equipment blank, etc.) will be collected for each media (liquid in object, soil, sediment, soil vapor, or groundwater) that is suspected to be impacted. In addition to primary samples, duplicate samples and other applicable QC samples will be collected and submitted for analysis. The samples will be collected in accordance with industry standard protocols and collection procedures as identified by the competent and licensed professional overseeing the work. As an initial screen, collected samples may be analyzed for the following constituents:

- Volatile organic compounds (VOCs), including fuel oxygenates by EPA Test Method 8260B or approved equivalent;
- Semi-volatile organic compounds (SVOCs), including polycyclic aromatic hydrocarbons (PAHs) by EPA Test Method 8270C or approved equivalent;
- CAM 17 Metals by EPA Test Method 6010B/7400 or approved equivalent;
- Pesticides by EPA Test Method 608 or EPA Test Method 8081A or approved equivalent;
- Polychlorinated biphenyls (PCBs) by EPA Test Method 608 or EPA Test Method 8082 or approved equivalent;
- TPH-gasoline range organics (TPH-gasoline) by EPA Test Method 8015B or approved equivalent;
- TPH-diesel range organics (TPH-diesel) by EPA Test Method 8015B or approved equivalent;
- TPH-motor oil range organics (TPH-motor oil) by EPA Test Method 8015B or approved equivalent; and
- Radionuclides radium-226 and cesium-137.

Analyses will be selected to correspond with the suspected constituents of potential concern (COPCs) at the location being assessed. Conditions that will be considered in selecting the analysis include previous work conducted by the Navy at the location, known conditions as documented in Navy reports for the location, history of hazardous substance and/or petroleum use at the location as documented by the Navy, field observations, and other anecdotal information. The results of the initial sampling will be compared to the Petroleum Program Strategy Preliminary Screening Criteria (PSC) and/or applicable Record of Decision (ROD) remediation goals. In the event that a constituent is detected that is not listed in the Petroleum Program Strategy PSC and/or applicable ROD remediation goals, the most recent version of the EPA's Regional Screening Levels (RSLs) will be used. Evaluation of the analytical results will allow the Owner to make an initial determination whether the Condition is:

1. A Condition that does not require further response or regulatory oversight; or,
2. A petroleum Condition that requires further evaluation and response; or,
3. A hazardous substance/comingled Condition that requires further evaluation and response.

Based on the evaluation of the results of the chemical testing, the Owner will then inform the SFDPH and the FFA Signatories of its findings, conclusions, and recommendations (See Flowchart H-1, Boxes 2B and 3). This determination will be made, in summary, as follows:

No Further Response. No further response or regulatory oversight is required if: i) the Condition is a petroleum substance Condition; ii) petroleum constituents in samples are below Tier 1 Petroleum PSC; and iii) and the Condition is not a subsurface object or structure (Flowchart H-1, Boxes 4, 4A, 4B, and 4C). In addition, no further response or regulatory oversight is required if: i) the Condition is a hazardous substance/petroleum substance co-mingled Condition; ii) the hazardous substances in samples are below ROD remediation goals or RSL if not listed in the ROD; iii) any petroleum constituents are beneath Tier 1 Petroleum PSC; and iv) the Condition is not a subsurface object or structure. In such cases, the Owner shall notify SFDPH and the FFA Signatories of its findings (including analytical results), prepare and submit a Closure Report to the SFDPH and FFA Signatories, and upon approval of the Closure Report by the SFDPH and FFA Signatories proceed with redevelopment work under the guidance of the RMP (Flowchart H-1, Boxes 5, 5A, 5B, and 5C).

Additional Petroleum Evaluation and Response. Additional evaluation and response is required if: i) the Condition is a petroleum substance Condition; and ii) petroleum substances in samples are above Tier 1 Petroleum PSC; or iii) the Condition is a subsurface object or structure (Flowchart H-1, Boxes 4, 4A, 4D, and 4E). If in the course of evaluating the Unexpected Condition, the soil exhibits a total TPH concentration equal or greater than the Navy's petroleum Source Criterion for soil (3,500 mg/kg total-total petroleum hydrocarbons), the soil will be managed as if it contains separate-phase petroleum product. In such cases, the Owner shall notify the SFDPH and the FFA Signatories of its findings (including analytical results) and proceed with the evaluation and response in conjunction with the development activities as described in Section 3 below and as identified in Flowchart H-2.

Additional Hazardous Substance Evaluation and Response. Additional evaluation and response is required if: i) the Condition is a hazardous substance/petroleum substance co-mingled Condition; ii) the concentration of the hazardous substances in samples are above applicable ROD remediation goals or RSL if not listed in the ROD; or iii) the Condition is a subsurface object or structure. In such cases, the Owner shall notify the SFDPH and the FFA Signatories of its findings (including analytical results) and proceed with the evaluation and response in conjunction with the development activities as described in Section 4 below and as specified in Flowchart H-1, Box 5, 5A, 5D, 5E, and Flowchart H-3.

3. PETROLEUM SUBSTANCE CONDITION

If the Owner, the SFDPH, and FFA Signatories have determined that the Unexpected Condition is a petroleum substance Condition, evaluation and response work will proceed following the process outlined in Flowchart H-2. In general, all work will comply with the Preliminary Screening Criteria and Petroleum Strategy (Shaw, 2007). Work will occur under the oversight of the RWQCB with notification to and consultation with the SFDPH as appropriate. Completion of petroleum substance evaluation and response under this UCRP will be documented in a Site Closure Report submitted for the RWQCB review and approval or, under certain circumstances identified below, preparation of a condition-specific CAP may be necessary, with RWQCB review and approval, in consultation with the SFDPH.

If the Unexpected Condition encountered is a physical object(s) determined to contain or have contained petroleum substances only, including such objects as a UST, pipelines, sump, drum or other containers, the object(s) will be removed in consultation with the RWQCB (Flowchart H-2, Box 2B), and in accordance with applicable SFDPH permitting procedures. Upon removal of the object(s), the surrounding material will be assessed for visual evidence, olfactory evidence, and with field instruments for evidence of petroleum substances. Affected material will be designated as such on the basis that it appears discolored, as compared to surrounding Bay Fill/native soil, and it exhibits a chemical odor, and field monitoring instruments register a concentration that exceeds levels typical of Bay Fill/Native soil. Removal of the affected material will proceed as presented in Section H3.1 and Flowchart H-2, Box 2A.

If there is no evidence of additional contamination in the excavation, other than the removed physical object, final confirmation soil samples from the excavation will be collected. Final confirmation soil samples will be collected for analysis in accordance with the procedures specified in the Petroleum Corrective Action Plan (PCAP). The collected soil samples will be analyzed for the following constituents, as applicable, and based on initial sample results of the contents of the removed object:

- TPH-gasoline;
- TPH-diesel;
- TPH-motor oil;
- BTEX, MTBE; and,
- PAHs.

Soil sample results will be screened against the Tier 1 Petroleum PSC for shallow soils (<10 feet below ground surface [bgs], residential reuse, non-drinking water resources) (Shaw, 2007). If soil samples contain COPCs above the Tier 1 Petroleum PSC, removal of the affected material or further evaluation will proceed as presented in Section 3.1.

If soil samples do not contain concentrations of petroleum substances above the Tier 1 Petroleum PSC and no groundwater was encountered, a Site Closeout Report will be prepared documenting a no further action recommendation for RWQCB approval. Upon submittal of the Closeout Report, development activities will continue under the guidance of the RMP or approved Restricted Activities wWork pPlan.

Groundwater encountered during the removal of the object(s) will be addressed as presented in Section 3.2.

3.1 Excavation of Petroleum Affected Material

If affected material is encountered during the removal of an object(s) or as a stand-alone material, excavation and segregation of the affected material will proceed. The excavated affected material will be segregated, stockpiled, and secured pending characterization sampling for reuse, further treatment, or offsite disposal (Flowchart H-2, Boxes 10B, 14, 14B, 15, 15B, and 14A). The excavation will incrementally extend laterally and vertically to the maximum extent feasible to remove affected material. Vertical excavation will extend until the affected material is removed to an initial depth of 10 feet bgs or groundwater is encountered, whichever is shallower. If affected material extends past the initial depth of removal (10 feet bgs or first groundwater, whichever is shallower), the RWQCB will be notified and consulted to determine if the residual contamination represents a human and/or ecological hazard based on existing subsurface conditions, nature of the contamination, and proposed development plan for the area. If, during the excavation of the affected material, the volume of the excavated material exceeds 100 cubic yards, the RWQCB will be notified and excavation of additional material will continue.

Upon removal of the affected material, excavation confirmation samples will be collected for analysis in accordance with the procedures specified in the PCAP (ITSI, 2009). Excavation confirmation soil samples will be analyzed for the presence of the following constituents, as applicable, based on initial characterization results of the contents of the removed object and/or encountered stand-alone affected material:

- TPH-gasoline;
- TPH-diesel;

- TPH-motor oil;
- BTEX/ MTBE; and,
- PAHs.

The results of the excavation confirmation soil samples will be compared to the Tier 1 Petroleum PSC for shallow soil (Shaw, 2007).

If concentrations of petroleum substances remaining in the excavation are below the Tier 1 Petroleum Program Strategy screening levels, the RWQCB will be notified, excavation will stop, and characterization samples of the excavated segregated material will be collected as described in Section 3.3 (Flowchart H-2, Boxes 10~~A~~, ~~11~~, and 10B).

If, however, the concentrations of remaining chemicals of potential concern (COPCs) are above the Tier 1 Petroleum Program Strategy screening levels, an evaluation of the site conditions using the framework in the Low-Threat UST Case Closure Policy (SWRCB Resolution 2012-0016) will be made in consultation with the RWQCB. If the Low-Threat criteria evaluation indicates that the site is suitable for no further action, no additional soil removal will occur, and characterization samples will be collected from the excavated segregated material as per Section 3.3 (Flowchart H-2, Boxes 10A, 10B, and 11). If the Low-Threat Criteria evaluation indicates that the site requires further action, Owner shall consult with the RWQCB to determine whether excavation and segregation of the affected material will continue, or whether preparation of a Site-specific CAP is required (Flowchart H-2, Box 10A, 11, 12, and 13).

3.2 Encountered Groundwater

If excavation of affected soil extends to groundwater and groundwater has a measureable TPH free-product thickness of greater than 0.01 feet, the RWQCB and SFDPH will be notified and both agencies consulted to determine if preparation of a Site-specific CAP is required (Flowchart H-2, Boxes 3A, 4A, 5A, and 7A). If groundwater without measurable free product is encountered, a groundwater sample will be collected and analyzed for the presence of the following constituents, as applicable, and based on initial characterization results of the contents of the removed object and/or encountered stand-alone affected material:

- TPH-gasoline;
- TPH-diesel,
- TPH- motor oil;

- BTEX/MTBE; and,
- PAHs.

Groundwater samples will be collected and analyzed according to the procedures outlined in the PCAP. Laboratory results of the collected groundwater sample will be compared to the Tier 1 Petroleum PSC and based on the location of the discovered Unexpected Condition (e.g., distance from the Bay Margin). If total TPH, BTEX, PAH, or MTBE concentrations in the collected groundwater sample exceed the Tier 1 Petroleum PSC for the location where the TPH Unexpected Condition was encountered, the SFDPH will be notified and consultation with the RWQCB will take place to determine if preparation of a Site-specific CAP is necessary (Flowchart H-2, Boxes 7B, 5A, and 7A). If encountered groundwater does not contain TPH COPCs above the Tier 1 Petroleum PSC, work will continue under the guidance of the RMP and the RWQCB will be notified (Flowchart H-2, Boxes 6A, 7B, and 8).

3.3 Segregated Material Characterization

Segregated material (e.g., soil) derived during removal of the encountered object(s) and/or as part of affected material excavation activities will be sampled for handling and waste disposal purposes. Composite sampling of the segregated material will not be allowed and the number of discrete, segregated material samples collected for waste profiling will be as follows (DTSC, 2001):

Volume of Segregated Material	Samples per Volume
Up to 1,000 cubic yards	1 discrete sample per 250 cubic yards
1,000 to 5,000 cubic yards	4 discrete samples for first 1,000 cubic yards plus 1 discrete sample per each additional 500 cubic yards
Greater than 5,000 cubic yards	12 discrete samples for first 5,000 cubic yards plus 1 discrete sample per additional 1,000 cubic yards

DTSC Information Advisory, Clean Imported Fill Material, October 2001.

Segregated material samples will be analyzed for the following constituents, as appropriate, and based on the initial characterization analytical results collected when the affected material was first encountered:

- TPH-gasoline;
- TPH-diesel;

- TPH-motor oil;
- BTEX, MTBE; and/or,
- PAHs.

Sample results will be provided to candidate waste disposal facilities for comparison with waste disposal acceptance criteria. The material will be disposed at a Class I, Class II, or Class III waste disposal facility that is permitted to accept the waste as characterized by the waste profile.

As an alternative to disposal at a Class I or Class II waste disposal facility, the Owner may consult with the RWQCB to determine if onsite treatment is an option (Flowchart H-2, Boxes 14B and 15). If onsite treatment is approved, the segregated material will be treated until petroleum COPC concentrations are below:

- Tier I Petroleum PSC for shallow soil; or,
- Soil Import Plan screening criteria; or,
- Waste acceptance criteria for Class III disposal.

Treated soil with COPC concentrations below the Tier 1 Petroleum PSC may be used as fill material and placed under the Durable Cover. Treated soil with petroleum COPC concentrations below the Soil Import Plan (Appendix F) screening criteria may be used as clean fill for the Durable Cover. Treated soil that is not used as onsite fill and that meets Class III disposal criteria may be disposed offsite at a Class III landfill. The Owner will notify the RWQCB of its intent to handle and place or dispose of the treated soil and prepare a Site Closeout Report for review and approval (Flowchart H-2, Box 14A).

If onsite treatment is not approved, the excavated material will be hauled offsite for disposal at a Class I, Class II, or Class III waste disposal facility that is permitted to accept the waste as characterized by the waste profile (Flowchart H-2, Box 15A). After disposal of the segregated material, no further action will be recommended and a Site Closure Report will be prepared and submitted for RWQCB approval.

4. HAZARDOUS SUBSTANCES CONTAMINATION

If, during the initial evaluation of the analytical results for a physical object and/or affected material (described herein at Section 2.2), the Unexpected Condition is determined to require additional evaluation and response (Flowchart H-1, Box 5E), the following process will be undertaken as outlined in the Hazardous Substances Unexpected Condition Flowchart (Flowchart H-3). Work will occur under the oversight of the SFDPH, except in two circumstances: i) where the work requires a new CERCLA action or decision document because hazardous substances are identified at levels above ROD remediation goals or a new hazardous substance is identified as specified in Sections 4.1 and 4.2 below; or ii) the SFDPH or the FFA Signatories determine on a case-by-case basis at any point in the process described in this Section H4.0 that it is more appropriate for technical or regulatory reasons for specific work to be conducted under the oversight of a designated FFA signatory. References to "SFDPH" in this section are deemed to be references to the designated FFA Signatory in any instance in which the SFDPH or the FFA Signatories have determined oversight by a designated FFA Signatory is appropriate. Completion of hazardous substances contamination evaluation and response under this UCRP will be documented in a Closure Report submitted for SFDPH review and approval. Where a new CERCLA action or decision document is determined to be necessary under the circumstances specified in Sections H4.1 and H4.2 below or an FFA Signatory oversees the work, the developer will obtain any necessary approvals from the appropriate FFA Signatory or FFA Signatories.

If the Unexpected Condition encountered is a physical object(s), including such items as USTs, sumps, drums, or other containers, the object(s) will be removed in consultation with the SFDPH and in accordance with applicable SFDPH permitting requirements, and the FFA Signatories will be notified (Flowchart H-3, Box 2B). Upon removal of the object(s), the surrounding material will be assessed for physical characteristics (visibly stained soil and chemical odor) and screened with field instruments for evidence of contamination. Affected material will be designated as such on the basis that is appears discolored, as compared to surrounding Bay Fill/Native Soil, it exhibits a chemical odor, and field monitoring instruments register a concentration that exceeds levels typical of Bay Fill/Native Soil. Removal of the affected material will proceed as presented in Section H4.1.

If there is no evidence of additional affected material in the excavation, other than the removed physical object, final soil confirmation samples will be collected from the excavation in accordance with the procedures outlined in the Navy's Parcel-specific Remedial Action Work Plan (RAWP). Collected soil samples will be analyzed for the

following constituents, as applicable, and based on initial assessment results of the contents of the removed object:

- VOCs including MTBE;
- SVOCs;
- CAM 17 Metals;
- Pesticides;
- PCBs;
- TPH-gasoline;
- TPH-diesel; and,
- TPH-motor oil.

Collected soil sample results will be screened against the applicable ROD remediation goals or RSL if not listed in the ROD and Tier 1 Petroleum PSC. If soil samples contain COPCs above the applicable ROD remediation goals Tier 1 Petroleum PSC, or RSLs if not listed in the ROD, removal of the affected material will proceed as presented in Section H4.1.

If soil samples do not contain COPCs above ROD remediation goals Tier 1 Petroleum PSC, or RSLs if not listed in the ROD, a Closure Report will be prepared for SFDPH review and approval, the FFA Signatories will be notified, and work will continue under the guidance of the RMP (Flowchart H-3, Boxes 1, 2B, 3B, 4B, 5B, and 6B). If it is determined that no additional sampling of the excavation is necessary, and no groundwater was encountered (Flowchart H-3, Boxes 1, 2A, 3A, and 8), excavation will stop, and characterization of the excavated segregated material (excavated during the removal of the subsurface object) will proceed as per Section H4.3 (Flowchart H-3, Boxes 8, 9, and 9B).

Encountered groundwater during the removal of the object(s) will be addressed as presented in Section H4.2.

4.1 Excavation of Material with Hazardous Substances

If material with hazardous substances is encountered during the removal of an object(s) or as a stand-alone material, the excavated affected material will be segregated, stockpiled, and secured pending characterization sampling for reuse, further treatment, or offsite disposal as per Section H4.3. The excavation will incrementally extend laterally

and vertically to the maximum extent feasible to remove obviously affected material. In the case of affected material that cannot be readily identified by physical characteristics, the use of field screening instrumentation such as a PID or OVM will be implemented to assess the appropriate lateral and vertical extent of the excavation. Vertical excavation will extend until obviously affected material is removed to a depth of 10 feet bgs or the depth at which groundwater is encountered, whichever is shallower.

Upon removal of the affected material, soil confirmation samples will be collected from the excavation as specified in the Navy's Parcel-specific RAWP. Soil confirmation samples will be analyzed for the presence of the following constituents, as applicable, and based on initial characterization results of the contents of the removed object and/or encountered stand-alone affected material:

- VOCs (including methyl tert-butyl ether [MTBE]);
- SVOCs;
- CAM 17 Metals;
- PCBs;
- Pesticides;
- TPH-gasoline;
- TPH-diesel; and,
- TPH-motor oil.

The results of the excavation confirmation samples will be compared to the applicable Parcel-specific ROD remediation goals or Tier 1 Petroleum PSC or RSLs if not listed in the ROD.

If concentrations of COPCs remaining in the excavation are below the applicable screening levels, the SFDPH and the FFA Signatories will be notified, excavation will stop, and characterization samples of the excavated segregated material will be collected as per Section 4.3 (Flowchart H-3, Box 9B).

If, however, the concentrations of remaining COPCs are above the applicable screening levels, the SFDPH and the FFA Signatories will be notified and consulted to determine if the residual contamination represents a human and/or ecological hazard based on existing subsurface conditions, nature of the contamination, and proposed development plan for the area, in which case, a new CERCLA action by the Navy may be necessary. Owner

will prepare a technical memorandum and recommendation for FFA Signatory review and determination (Flowchart H-3, Box 9A).

4.2 Encountered Groundwater

If excavation of affected soil extends to groundwater, a groundwater sample will be collected in accordance with the Navy's Parcel-specific RAWP. The collected groundwater sample will be analyzed for the presence of the following constituents, as applicable, and based on initial characterization results of the contents of the removed object and/or encountered stand-alone affected material:

- VOCs (including MTBE);
- SVOCs;
- CAM 17 Metals;
- PCBs;
- Pesticides;
- TPH-gasoline;
- TPH-diesel; and,
- TPH-motor oil.

If COPCs concentrations in the collected groundwater sample exceed the applicable ROD remediation goal (Flowchart H-3, Box 4~~5~~A), Tier 1 Petroleum PSC (if applicable), or RSLs if not listed in the ROD, the SFDPH will be notified and the FFA Signatories will be consulted to determine if a new CERCLA action is required. In this case, Owner will prepare a technical memorandum and recommendation for FFA Signatory review and determination. If the concentrations of COPCs in the groundwater sample do not exceed the appropriate screening levels, work will proceed under the guidance of the RMP under SFDPH oversight, and the FFA Signatories will be notified (Flowchart H-3, Box 7).

If VOCs are present, collection of soil vapor samples may be required according to the DTSC Vapor Intrusion Guidance (DTSC, 2011 and 2012) to evaluate whether the area should be designated as a VOC Area Requiring Institutional Controls (ARIC). The results of the soil vapor sample analysis will then be compared to the Soil Gas Action Levels (SGALs) established for the Site. If soil vapor sample(s) were collected and COPC concentrations in the collected soil vapor sample(s) exceed the applicable SGAL and the area is not already in a designated VOC ARIC, the SFDPH will be notified and the FFA Signatories will be consulted to determine if the area should be added to the VOC ARIC

designation or whether other action is required (Flowchart H-3, Boxes 6, 6A, and 6C). If soil vapor sample(s) were collected and COPC concentrations in the collected soil vapor sample(s) do not exceed the appropriate SGALs, work will proceed under the guidance of the RMP under SFDPH oversight, and the FFA Signatories will be notified (Flowchart H-3, Box 6D).

4.3 Segregated Material Characterization

Segregated material (e.g., soil) will be sampled for characterization purposes. Composite sampling of the segregated material will not be allowed and the number of discrete segregated material samples collected for characterization will be as follows (DTSC, 2001):

Volume of Segregated Material	Samples per Volume
Up to 1,000 cubic yards	1 discrete sample per 250 cubic yards
1,000 to 5,000 cubic yards	4 discrete samples for first 1,000 cubic yards plus 1 sample per each additional 500 cubic yards
Greater than 5,000 cubic yards	12 discrete samples for first 5,000 cubic yards plus 1 discrete sample per additional 1,000 cubic yards

Data from DTSC Information Advisory, Clean Imported Fill Material, October 2001.

Samples will be analyzed for the following constituents, as applicable, and based on the initial characterization analytical results collected when the affected material was first encountered:

- VOCs, (including MTBE);
- SVOCs;
- CAM 17 Metals;
- PCBs;
- Pesticides;
- TPH-gasoline;
- TPH-diesel; and,
- TPH-motor oil.

Sample results will be provided to candidate waste disposal facilities for comparison with waste disposal acceptance criteria. The material will be disposed at a Class I, Class II, or

Class III waste disposal facility that is permitted to accept the waste as characterized by the waste profile (Flowchart H-3, Boxes 9B, 10, 10A, 11, and 11B).

For segregated material with COPCs concentrations exceeding ROD remediation goals or RSLs if not listed in the ROD for soil, the SFDPH will be consulted to determine if onsite treatment of hazardous substance- contaminated soils is viable. If onsite treatment of contaminated soil is approved by the SFDPH, the soil will be treated and re-sampled until hazardous substance concentrations are below the applicable screening levels (Flowchart H-3, Boxes 9B, 10, 10A, 11, 11A, and 10B). Once ROD remediation goals Tier 1 Petroleum PSC, and/or RSLs if not listed in the ROD have been met, the treated soil may be used as fill material and placed under the Durable Cover. A Closure Report will be prepared and submitted to the SFDPH for review and approval, the FFA Signatories will be notified, and additional work will proceed under the guidance of the RMP (Flowchart H-3, Box 10B).

If onsite treatment is not approved by the SFDPH, Owner will dispose of the material in accordance with applicable laws and regulations. The Owner will prepare a Closure Report for SFDPH approval and will notify the FFA Signatories (Flowchart H-3, Box 11B).

5. REFERENCES

Department of Toxic Substances Control (DTSC), 2001. Information Advisory, Clean Imported Fill Material. October.

DTSC, 2012, Advisory – Active Soil Gas Investigations. April

DTSC, 2011. Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Vapor Intrusion Guidance). October.

ITSI, 2009. Final Project Work Plan Petroleum Hydrocarbon Corrective Action Parcel B. June

Shaw Environmental Inc. (Shaw), 2007. Final New Preliminary Screening Criteria and Petroleum Program Strategy, Hunters Point Shipyard, San Francisco, California. 21 December.

USEPA, 2014. Region IX Regional Screening Levels. May.

FLOWCHARTS